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§ 4. *Vulgares*: procumbentes vel adscendentes: articuli plerumque minores: aculei validi, subteretes vel nulli, albidi vel obscuriores: bacca clavata.

16. *O. RAFINESQUII*, E. in P. R. R.: diffusa; radice fibrosa; articulis obovatis vel suborbiculatis perviridibus, foliis elongatis patulis; pulvillis subremotis setas graciles rufas gerentibus plerisque inermibus; aculeis paucis marginalibus validis rectis singulis erectis patulisve, uno alterove minore deflexo subinde adjecto, rufo variegatis; alabastro acuto; ovario clavato pulvillis 20–25 stipato; petalis 10–12; stigmatibus 7–8; bacca clavata.

Var. *MICROSPERMA*: subinermis: seminibus minoribus angustius marginatis.

Sterile, sandy, or rocky soil in the Mississippi valley, from Kentucky to Missouri, and from Minnesota southward: fl. May and June.— Joints 3–5 inches long; leaves 3–4 lines long; spines 9–12 lines long, sometimes entirely wanting. Flowers $2\frac{1}{2}$ – $3\frac{1}{2}$ inches in diameter, yellow, often with a red centre. Seed $2\frac{1}{2}$ lines, or in the variety less than 2 lines in diameter.— This species had been confounded with the Eastern *O. vulgaris* by all our botanists, with the exception of Rafinesque, who pretended to distinguish three species, viz. *O. humifusa*, *O. cæspitosa*, and *O. mesacantha* (sometimes erroneously accredited to Nuttall), which cannot be made out, and which I have again united under their author's name.— The following is probably only a Southern variety of this species:—

O. GRANDIFLORA, E.: subadscendens; articulis majusculis; pulvillis remotis; setis tenuissimis; aculeis subnullis; floris grandis ovario elongato; petalis sub-10 latissimis; stigmatibus 5; bacca elongata clavata.

On the Brazos, Texas.— Joints often 5–6 inches long; pulvilli nearly an inch apart. Flowers $4\frac{1}{2}$ –5 inches in diameter, red in the centre; petals 2 inches long or more, and $1\frac{1}{2}$ wide.

Dr. Bigelow collected on his tour from Arkansas to Santa Fé several forms, which, though somewhat distinct, are perhaps not entitled to be considered species. The true *O. Rafinesquii* does not seem to occur west of the western line of Missouri and Arkansas. The Western forms or subspecies are:—

O. CYMOCHILA, E. & B. in P. R. R.: diffusa; articulis orbiculatis; pulvillis subremotis stramineo- seu fulvo-setosis plerisque armatis; aculeis 1–3 robustioribus albidis basi fulvis patentibus deflexisve, additis

sæpe 2–3 minoribus; stigmatibus 8; bacca obovata; seminibus undulato-marginatis majusculis.

Var. β . MONTANA: subinermis; stramineo-setosa.

Along the Canadian River east of the Llano Estacado, and on that plain. Var. β . near Albuquerque. — Joints $2\frac{1}{2}$ –3 inches in diameter, in β . larger; longer spines 1–2 inches long. Fruit short, pulpy, sweet. Seed $2\frac{1}{2}$ lines in diameter, with a very sharp irregularly wavy or twisted border. — The var. β . seems to unite the common *O. Rafinesquii* with this form.

O. STENOCHILA, E. & B. l. c.: prostrata; articulis obovatis; pulvillis remotis stramineo-setosis, superioribus solum armatis; aculeis singulis albidis patulis, 1–2 minoribus deflexis sæpe adjectis; bacca obovata clavata; seminibus crassis anguste marginatis.

Zuni, Western New Mexico. — Joints 4 inches long and 3 wide; spines 1– $1\frac{1}{4}$ inches long. Fruit green or pale red, very juicy, $1\frac{1}{2}$ or sometimes even $2\frac{1}{2}$ inches long. Seeds quite peculiar, regular, much thicker in proportion than those of most other *Opuntia*, and with a very narrow edge. — Another form, with smaller and rounder joints, more spines, smaller fruit, but similar seeds, was found in the same neighborhood.

All the forms described above have fibrous roots. The following are principally characterized by their bulbous or tuberous roots, but can hardly be otherwise distinguished from the forms already described. Both are found westward of the range of *O. Rafinesquii* proper, and may be considered as subspecies, the peculiarities of which are readily propagated by seeds.

O. MACRORHIZA, E. in Pl. Lindh. part 1: prostrata, sæpe adscendens, radicibus tuberosis; articulis obovato-orbiculatis perviridibus; pulvillis subremotis rufo-setosis, superioribus solum armatis; aculeis singulis validis sæpe variegatis patulis, 1–2 gracilioribus deflexis subinde additis; alabastro acuminato; petalis circiter 8 sulphureis basi miniatis; stigmatibus 5; bacca obovata basi clavata, umbilico lato; seminibus subregularibus compressis minoribus.

Sterile, rocky places on the Upper Guadalupe River, in Texas: fl. May and June. — Roots in young specimens fusiform, in old ones enlarged to fleshy tubers, sometimes 2 or 3 inches in diameter. Joints $2\frac{1}{2}$ – $3\frac{1}{2}$ inches long, the leaves and bristles the same as in *O. Rafinesquii*. Flowers 3 inches in diameter. Fruit green or pale purple, smaller and sweeter than that of *O. Rafinesquii*.